
Indiana Family and Social Services Administration

Data Warehouse Gap Analysis

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Data Warehouse Gap Analysis

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Executive Summary

FSSA collects a massive amount of data related to clients, providers, services, and payments in support of its programs. Most data resides in independent data sources across the agency. Because some programs require input from other programs, various solutions have been developed to collect and integrate data. A common practice within FSSA is the development of data extracts that are shared across FSSA and other state agencies. However, there are a few programs that have created individual data repositories sometimes called data warehouses or data marts from which to conduct ongoing data analysis and to support reporting requirements.

There is little doubt FSSA needs to manage data at the enterprise level. This paper considers the current data exchanges and repositories, and will begin to address the development of an enterprise strategy to establish a single, consistent reporting repository for use by all FSSA programs. This analysis covers a representative sample of FSSA programs and provides a base line of where these program areas are in respect to enterprise data warehouse readiness.

The goals of this Gap Analysis are to:

- Evaluate management support and buy-in for an enterprise data warehouse
- Evaluate existing data standards and organization
- Evaluate the existing technology infrastructure
- Evaluate the adoption of enterprise tools
- Provide recommendations for achieving a FSSA data warehouse

Across the agency, a wide range of readiness was observed. In some cases users reported satisfaction with current tools; however, their program area received a relatively low score on readiness based on a program-centric focus. Alternatively, a low score may be indicative of lack of management buy-in to the enterprise concept, technically weak tools or limited processes.

FSSA will realize many benefits from the investment in an enterprise data warehouse, including but not limited to: increased data quality, consistency, accuracy, access and timeliness of information.

Analysis focused on understanding the current state of the technology infrastructure and the current business needs, goals and objectives of the selected program areas within FSSA. Interviews were conducted with program area leaders and technical analysts based on their use of data repositories and business intelligence software.

Raw data was compiled and analyzed to identify trends and broad themes, and the conclusions are presented in this document. Metrics were developed to identify an area's readiness to participate in an enterprise data warehouse effort. The metrics include both technical and non-technical aspects that play a role in the success of an enterprise data warehouse.

Gap Analysis

Definition of Metrics and Scale

The following chart shows the metrics used to evaluate program areas' readiness for the move to an enterprise data warehouse.

Metric	Definition
Management Support and Buy-in	Having support from program-area management/stakeholders is one of the key success items for any data warehouse. Success elements include: <ul style="list-style-type: none">• Understanding of basic data warehouse concepts• Understands the need for enterprise-level data• Can provide resource support (financial, staff, etc.)• Direction is supported by all levels of management• Business metrics are defined
Data Standards and Organization	At the heart of an enterprise data warehouse is, of course, data. Success elements for readiness in this area include: <ul style="list-style-type: none">• Having documented metadata• Using standard naming conventions• Normalized data• Some validation and cleansing processes• Iterative processes for metadata, standards, validation, etc.• Data is organized for analysis (dimensional) rather than based on the transactional structure
Database Platform and Development Methodology	To be able to appropriately access and obtain the data, the database plays a role. Success elements for readiness include: <ul style="list-style-type: none">• A clear development methodology has been applied in designing the database• The database platform is standard and is of open architecture
Enterprise Tool Implementation	To identify the level of effort needed to include an area in the data warehouse, the adoption of enterprise tools (e.g., Cognos) is a factor. Success elements for readiness include: <ul style="list-style-type: none">• Enterprise tools are implemented and used• Users are trained on the tool use• A development methodology is in place for developing and using the tools

The following scale was used for each of the metrics above. The assignment of the scale was based on the business and technical questionnaire.

- 1 – Enterprise-level preparedness
- 2 – Some enterprise preparedness, but missing some success elements
- 3 – Program- or department-level organization, methodology or support
- 4 – Limited standards, methodology, organization or support

Enterprise Data Warehouse Readiness

The chart below shows the evaluation of the readiness of each program area according to the four key metrics.

Enterprise Data Warehouse Readiness				
Program Area	Management Support & Buy-in	Data Standards & Organization	DB Platform & Development Methodology	Enterprise Tool Implementation
TANF/IMPACT	1	2	1	1
Food Stamps	1	2	1	1
Medicaid Eligibility	3	2	1	1
Medicaid Policy (OMPP)	3	1	1	1
Financial Management	2	4	4	4
Office of Data Management	1	2	1	1
Budget, Reports and Statistics	2	3	4	1
Healthy Families Indiana	2	2	1	3
DMHA State Operated Facilities	3	3	3	4
DMHA Regional Services	2	4	4	3
DMHA Community Mental Health Services	1	2	2	2
DMHA Community Substance Abuse & Gambling Svcs.	1	2	2	2
First Steps	1	2	1	2
Bureau of Child Development	1	2	1	3
Div. of Disability & Rehabilitative Services	1	3	3	4
Bureau of Aging & In-Home Services	1	3	3	4

Summary

Among all programs areas there is a wide range to the level of readiness to participate in an enterprise data warehouse. It is clear that some areas are more ready than others. However, each area has a different set of barriers, either technical or non-technical.

All program areas have data to support core elements of an enterprise data warehouse. Although data is available, few systems include robust validation or processes for adapting to policy changes. Most managers are aware of the enterprise direction of the agency; however, few understand how it impacts them or the commitment needed to succeed. Most management contacts have clearly defined success metrics for their program areas.

Most program areas do not have data standards and metadata are not compliant with industry best practices. System documentation is also a concern for smaller systems. Most systems have adequate technology in place that will allow integration with enterprise data warehouse tools. Although most program areas are familiar with business intelligence tools, most tools are restricted to a few key users.

Recommendations

Possibly the most critical success element in creating an enterprise data warehouse is significant management support. The following are needed to ensure that all stakeholders understand the project and their commitment:

- A project sponsor and steering committee with representation from all areas
- A project charter that defines the scope of the enterprise data warehouse and general structure of the effort
- Stakeholder sign-off to ensure follow-through
- Regular monitoring to a detailed project plan

From a data and technology perspective, the following need to be defined and implemented among program areas:

- Standard format for common data elements
- Standard validation processes
- Standard reporting tools

Business Readiness Assessment

After compiling and reviewing data from interviews, the following metrics were devised as indicators of business readiness of the program area.

Do your business objectives have quantitative success metrics?	This metric is used to evaluate the Program Areas readiness in the area of clearly understood business objectives and to evaluate if the program area has reportable success metrics in place for said objectives.
Do you have the data needed to meet business objectives?	This metric evaluates if the data used to support a program area is collected and organized in a way that existing or new metrics could be supported. If data is available but not managed by a technical system constitutes a lower score.
Are you able to fulfill data requests from other program areas?	Similar to above, evaluate the program areas ability to share data with other external program areas. Long lead times and non-technical data exchanges will lower the score.
Do your available tools adequately support the business objectives?	To do quantitative metric tracking and reporting require advanced processes and business tools. Evaluate the program areas use of such tools or readiness to engage in the use of business tools.

The chart on the following page assesses each of the covered program areas in terms of their business readiness. Detailed analysis of each program can be found in the next section.

Business Readiness Assessment				
Program Area	Business objectives have quantitative success metrics?	Have data needed to meet business objectives?	Able to fulfill data requests from other program areas?	Available tools adequately support business objectives?
TANF/IMPACT	Most	Most	Most	All
Food Stamps	Most	Most	All	All
Medicaid Eligibility	Some	Most	Most	Some
Medicaid Policy (OMPP)	All	Most	All	All
Financial Management	Most	All	Some	Some
Office of Data Management	Some	All	All	Some
Budget, Reports and Statistics	Some	All	All	All
Healthy Families Indiana	Most	Most	Most	Most
DMHA State Operated Facilities	Most	All	All	Some
DMHA Regional Services	Most	Some	Most	Some
DMHA Community Mental Health Services	Most	Most	All	Most
DMHA Community Substance Abuse & Gambling Services	Most	Most	All	Most
First Steps	Most	Most/All	Most	Most

Business Readiness Assessment				
Program Area	Business objectives have quantitative success metrics?	Have data needed to meet business objectives?	Able to fulfill data requests from other program areas?	Available tools adequately support business objectives?
Bureau of Child Development	Most	All	All	Some
Division of Disability & Rehabilitative Services	Some	Some	Some	Some
Bureau of Aging & In-Home Services	Some	Most	Some	Some

Business Analysis by Program Area

The analysis for each program in this section expands on the summary provided in the previous section.

TANF/IMPACT

Program Description

TANF (Temporary Assistance for Needy Families) is a block grant program designed to make dramatic reforms to the nation's welfare system by moving recipients into work and turning welfare into a program of temporary assistance. The Indiana Manpower, Placement and Comprehensive Training (IMPACT) Program helps TANF and Food Stamp recipients become economically self-sufficient. Family Case Coordinators work with the clients to tailor job-related services to help the clients achieve this goal.

Summary Analysis

One of the primary goals in managing TANF is to monitor Work Participation rate. This metric is a federal requirement: the work participation rate must be at least 50%. Data supplied in Work Participation cubes and reports helps meet this goal. On "fulfilling requested data to other program areas", one of the primary requirements for TANF management is to supply required TANF data to the federal government. This is sometimes difficult, as ICES is a "transactional" system and not set up for easily generating reports.

A primary tool in use by TANF and IMPACT management is Cognos. Cognos allows for easy extract of data from the cubes to Excel spreadsheets (which is very useful for management).

Food Stamps

Program Description

The Food Stamp Program enables low-income families to buy food with coupons and Electronic Benefits Transfer (EBT) cards. Food stamp recipients spend their benefits to buy eligible food in authorized retail food stores.

Summary Analysis

Two metrics are in place for Food Stamps: (1) error rates, or data problems or inaccuracies identified by audits of samples of the data, and (2) the state's level of Food Stamp participation. For assessing Food Stamps case error rates, data is collected on various quality control survey data sheets and entered into master files. An overall error rate is calculated, and it must be less than 6% to avoid sanctions. In addition, the federal government measures states in terms of their Food Stamps participation rate, which is measured in various summary reports.

Various reports on Food Stamps cases are supplied to Food Stamps's program management from several different sources. Sometimes it is difficult to reconcile differences between the different reports (due to lack of common understanding of "business rules" between these different sources).

No barriers were identified in fulfilling data requests to other program areas. Tools available are adequately fulfilling the needs of Food Stamp management.

Medicaid Eligibility

Program Description

Medicaid is the state-federal health care program for low-income children and families, senior citizens and people with severe disabilities. Medicaid serves about one in seven Hoosiers – nearly 800,000 – including more than 450,000 children and pregnant women through Hoosier Healthwise. Through waivers, Medicaid also helps seniors and people with disabilities live in their homes and communities instead of institutions. FSSA's Medicaid office also administers the Children's Health Insurance Program (CHIP), the Hoosier Rx prescription drug program for low-income seniors, and the Indiana Long Term Care Insurance Program. Their main IT system is the Indiana Client Eligibility System, ICES.

Summary Analysis

Do business objectives have quantitative success metrics? *Some*

The business objectives of Medicaid related to federal and state legislative changes are not significantly driven by internally maintained program metrics. The objectives identified within the Administrative function have metrics in place to monitor improvement.

Do you have all the data needed to meet those business objectives? *Most*

The data required to support the Administrative metrics are available. The federal and state legislative changes are monitored by compliance reporting.

Can I fulfill data requests from other program areas? *Most*

The program has current data available at all times and requests for additional information related to eligibility data are handled by referrals to ICES and Budget R& S data related to spending and coverage are referred to OMPP. Data related to legislation is handled internally.

Are the tools available adequately supporting the business objectives? *Some*

The program has access to ICES data at the detail level via the on-line system and also via COGNOS. At this time additional access to data was not seen as an issue.

Medicaid Policy (OMPP)

Program Description

The mission of OMPP's Data Management and Analysis Unit (DMA) is to continuously improve OMPP's ability to monitor enrollment, enrollee access, provider participation, quality of care and cost-effectiveness. As part of this mission, DMA manages Medicaid claims processing for FSSA. In addition, this group provides accurate, timely data to OMPP Policy staff. This is data that is required for policy decisions regarding processing of Medicaid claims.

Summary Analysis

Do business objectives have quantitative success metrics? *All*

There are 2 primary metrics for success for OMPP's DMA: (1) complete 98% of data/report requests for Medicaid Policy on the same day, and (2) complete 100% of data/report requests for Medicaid Policy within 3 days.

Do you have all the data needed to meet those business objectives? *Most*

One need identified in the interview: Additional data need for Death data (low priority) and DWD Wage data. In addition, the interviewee reported a deficiency in historical data. "Data [is available only] back to 1994. Some requests are for data older than '94, but they can't provide it."

Can I fulfill data requests from other program areas? *All*

Sometimes, if additional data is required, it is requested from various source systems. Other departments and source systems are very cooperative in this regard.

Are the tools available adequately supporting the business objectives? *All*

No additional tools are needed. There is a need for GIS capability for medical marketplaces: for example, where do clients live, how close are they to offices, etc.

Financial Management

Program Description

Financial Management is led by David Nelson. Their primary responsibility to the agency is to track all expenditures by program area and provide financial information back to the program areas. Financial is made up of about 52 accountants and clerks.

Summary Analysis

The accountants have defined goals and metrics that let them know if they are performing and delivering reports on time. This reporting is done with a lot of manual data transfers as part of the process.

Financial receives data from over 89 systems and program areas. Each accountant is responsible for a group of program areas. They also pass all data through their cost allocation vendor for budgeting purposes. They get all of the data they need to do their job.

Most data ends up in a hardcopy report format or in Microsoft Excel, which makes the data not easily passed back to feeding data systems. The Reports and Statistics group prepares some outgoing files for outside users. This is how we get the warehouse data for TANF reporting.

They have some home grown systems which provide some assistance but enterprise data manipulation or analysis tools are not currently in the existing processes. They are open to new tools which could aid in their daily processes.

Office of Data Management (ODM)

Program Description

The Office of Data Management (ODM) is a central resource for DFR executive staff, bureaus and local office staff that functions as a repository and distribution point for all reports and statistics for DFR. ODM provides DFR with a centralized knowledgebase for expertise in data interpretation and analysis incorporating program policy changes and reporting changes required by State or Federal guidelines. The office handles all internal and external requests for DFR data, and also verifies accuracy, consistency, and timely completion of all data requests. They also insure that the end user clearly understands the data they have been given and any limitations on the data.

Summary Analysis

The objectives of ODM are (1) to serve as the focal point for all DFR programs, in terms of data management, collection, reporting, analysis, formatting and sourcing, and (2) to produce consistent, accurate, and timely data responses.

ODM produces some reports according to a regular schedule. Examples include: DFR Annual Demographic Trend Report, DFR Monthly Management Report and IN Fact Sheet Annual Child Fatality Report, data for Indiana Youth Institute for annual Kids Count Data Book, and Monthly evaluation reports for federal and state administrators. Other requests for data are on an “ad hoc” basis. There are no specific quantitative success metrics to measure production of these reports.

No additional data requirements were identified for ad-hoc reporting. Frequently, ODM has to work with the different data systems to get information for ad-hoc requests. ODM interfaces with many data systems including but not limited to ICES, TANF Data Warehouse, ICWIS, ISETS, Prodnew, Datatude, TCC.

Additional direct access to SQL tables would be helpful to ODM. Also, to improve the dissemination of DFR data, it would be helpful to have more flexible standardized reports. In the ODM interview, it was estimated that 70% of the report requests could be satisfied by using a limited set of standardized reports.

Much of the reporting done by ODM involves reviewing multiple years' worth of data, at least 5 and as far back as 10 years or even more. With the current technology and data marts, it is cumbersome to summarize this much data, as it needs to be pulled from multiple sources or cubes.

Budget, Reports & Statistics

Program Description

This group supports Quality Control sampling, as well as state, federal and ad hoc reporting for various program areas within FSSA.

Summary Analysis

The measure of success for this group is timely and accurate summary reporting within FSSA. Some reports are produced according to a regular schedule, while other requests are on an ad hoc basis. There is no quantitative success metric tied to the completion of these reports.

Program areas supported include, but are not limited to, Financial Management, Claims Management, IMPACT, Child Support, Food Stamps, DFR Program Integrity. In addition, this group produces summary Food Stamp and Medicaid reports for FSSA, and Food Stamp monthly participation summary reports for the federal government (USDA).

All required data is available for this group to meet their business objectives. This data includes monthly ICES data extracts: from ICES, as well as the General Reports and Statistics extract sent by the TANF data warehouse. These data extracts are used by the group to produce the required reports (regularly scheduled, as well as ad hoc) for the program areas indicated, as well as general FSSA summary reports on Food Stamp and Medicaid cases.

Tools available are sufficient for the group to achieve its business objectives. These include mainframe SAS, a system of Master Quality Control Files, and Cognos.

Healthy Families Indiana

Program Description

Healthy Families Indiana is a voluntary home visitation program designed to promote healthy families and healthy children through a variety of services, including child development, access to health care and parent education. The program systematically identifies families that could benefit from education and support services either before or immediately after birth and is designed to strengthen families by reducing child abuse and neglect, childhood health problems and juvenile delinquency. Their main IT system is a vendor product called the Home Visiting and Tracking Information System (HVTIS, from Datatude, Inc.).

Summary Analysis

Do all your business objectives have quantitative success metrics? *Most*

The business objectives of Healthy Families Indiana are clearly defined with metrics in place to measure the program.

Do you have all the data needed to meet those business objectives? *Most*

The Healthy Families Indiana data repository supports the internal program metrics and the additional cross check with CPS data provides outside verification of the programs success.

Can I fulfill data requests from other program areas? *Most*

The program has existing links to outside areas; TANF data warehouse and the Office of Data Management and additional data is available from repository if required.

Are the tools available adequately supporting the business objectives? *Some*

The new Web-based system has greatly increased the access and usability of the data for state wide purposes.

DMHA State-Operated Facilities

Program Description

The State Operated Facilities are six inpatient hospitals in the DMHA organization. These hospitals provide mental health and substance abuse services to the most severely ill consumers. Additionally, those who are deemed not competent to stand trial or guilty by reason of insanity are treated in these facilities. Their main IT system is a vendor product called the Behavioral Health Information System (from Creative Sociomedics). As described below, there are plans to re-procure this type of system via an RFP (as well as a pharmacy system).

Summary Analysis

Do all your business objectives have quantitative success metrics? *Most*

Understandably the accreditation and certification process is very data driven and therefore have set metrics. Also, the monitoring of seclusion, restraint and other quality indicators show that the State Operated Facilities have mostly quantitative metrics. Some measurement of providing effective mental health treatment is the Global Assessment of Functioning, Readmission rates, satisfaction surveys, etc... However, it is not clear (at least from this questionnaire) how these are driving policy to improve overall care.

Do you have all the data needed to meet those business objectives? *All*

It appears that all data needed for the metrics is being collected and is available for reporting to JCAHO and other stakeholders.

Can I fulfill data requests from other program areas? *All*

It appears that data requests can be fulfilled. However, one of the responses is that hospitals (possibly individually) have to supply some data. In this case, the speed and flexibility may be limited.

Are the tools available adequately supporting the business objectives? *Some*

Due to the need for very skilled resources to access and appropriately gather necessary information (Robert Stimac), it appears that the tools only partially meet their needs. It appears that additional or different tools may be justified to speed the analyses and/or create more complex/robust reports and analyses. It appears that some statistical tools may be needed also.

DMHA Regional Services

Program Description

Facilitate the flow of communication between DMHA and providers regarding DMHA and /or provider initiatives, contracts, identified concerns and data needs. Collect data from providers related to specific contract reporting requirements. We also monitor a number of contracts (contract compliance).

Summary Analysis

Do all your business objectives have quantitative success metrics? *Most*

Based on the responses below, most of this area's business objectives can be data driven. Fortunately, an attempt has been made (via Microsoft Access databases) to collect and maintain the necessary data.

Do you have all the data needed to meet those business objectives? *Some*

Some data is owned by this area (in Microsoft Access files) and some is supported and maintained by other DMHA staff (CSDS and hospital staff). While there is cooperation in getting to all necessary data, it is often necessary to contact other staff (sometimes multiple staff) to get all the data.

Can I fulfill data requests from other program areas? *Most*

While it may take some time and effort to get to all necessary data, it appears that this area can fulfill requests with their own data or other data in DMHA.

Are the tools available adequately supporting the business objectives? *Some*

While the effort to collect and maintain history for their unique data needs is applauded, a review of the use of Microsoft Access databases should be done. One of the responses below even refers to a process of “overhauling reports and databases” to be more efficient and flexible.

DMHA Community Mental Health Services

Program Description

We have developed five program goals each with several objectives. The overarching goal (vision) for this Office is that all adults with serious mental illness and children with serious emotional disturbance will have the opportunity for recovery and to live in the community of their choice, to work and/or attend school, and to experience social connectedness within their community. To quote SAMHSA, the vision is “a life in the community for everyone”.

Summary Analysis

Do all your business objectives have quantitative success metrics? *Most*

While most of the data to support the metrics is available (or is being implemented), the responses below indicate that some metrics have not yet been clearly defined. This discussion is on-going in DMHA.

Do you have all the data needed to meet those business objectives? *Some*

As noted in the responses below, a challenge is collecting additional data from providers. This can be a challenge because DMHA does not provide a case management system for its providers. Therefore, providers customizing their case management systems can involve development cost and time. Since DMHA does not provide the majority of a provider’s revenue, the additional data collection ends up being a negotiation process.

Another challenge noted is the lack of reassessment information. Unfortunately, providers officially reassess their consumers at a rate of only around 25%. Therefore, it is sometimes difficult to identify significant change and/or monitor the treatment program.

Can I fulfill data requests from other program areas? *All*

Although this area may not have all the data it wants to support its goals, data requests are routinely handled by the DMHA data section.

Are the tools available adequately supporting the business objectives? *Most*

The implementation of the Cognos tools has elevated DMHA's staff access to data and ability for basic ad-hoc analysis. For the appropriate users, the PowerPlay OLAP data sets are very powerful and have replaced many "reports" that were previously run. However, often there is a need somewhere between Impromptu (traditional reports) and PowerPlay (OLAP analysis). DMHA continues to educate its staff to empower more users to use PowerPlay.

DMHA Community Substance Abuse and Gambling Services

Program Description

The Division contracts with managed care providers who provide an array of care for individuals who meet diagnostic, functioning level and income criteria. The managed care providers provide a year's care at the most appropriate levels to enrollees, including adults, children, adolescents, persons with a drug or alcohol problem, and persons with a gambling problem.

Summary Analysis

Do all your business objectives have quantitative success metrics? *Most*

Although an interview (due to travel) was not possible and a response to the questionnaire has not been received, experience in this area indicates that many of the goals (either federal or local) are supported by data driven metrics.

Do you have all the data needed to meet those business objectives? *Most*

As with the mental health area, data collection is an evolving effort. DMHA keeps pushing providers to submit the data to support federal and/or state initiatives.

Can I fulfill data requests from other program areas? *All*

As with the mental health area, the DMHA Data Section fulfills data requests on a routine basis.

Are the tools available adequately supporting the business objectives? *Most*

This program area has been the most avid users of the PowerPlay tool. Additionally, this area has requested Impromptu reports that are the first in the nation among state substance abuse agencies. Therefore, this program area is leveraging the available tools quite well.

First Steps

Program Description

First Steps, within the Bureau of Child Development/Division of Family Resources, provides family-centered services to infants and toddlers age birth to 3 who are experiencing developmental delays or are at risk of experiencing developmental delays.

Summary Analysis

First Steps management has defined several success criteria, both from business and service perspectives, and has put into place regular means of monitoring performance to these criteria.

First Steps users have several sources for obtaining data analysis. The DWH produces more than 30 deliverables for the program each year, which track performance to internal metrics and federal regulations. Some of these are used only internally, while others are published on the First Steps public Web site or submitted to the federal Department of Education. The Cognos analysis tools developed by the DWH provide regular access to data.

Other resources for obtaining analysis, both regular and ad hoc, exist in the Central Reimbursement Office (CRO) vendor, an Office of Data Management (ODM) analyst, reports available from payment systems, querying by a service contractor, and the First Steps financial manager. First Steps used to use the DWH for ad hoc querying but now does not because of a policy change that made such services chargeable.

The Financial Manager for First Steps forecasts and monitors expenditures and funds by manually pulling together data from several different payment sources. First Steps regularly exchanges data with OMPP, several programs at ISDH, and the Early Childhood Center at Indiana University. Breaking down technical and other barriers between systems, program areas and data would expand their analysis capabilities. They would also like to see a Web-based provider billing system.

Bureau of Child Development

Program Description

The Child Care Section of the Bureau of Child Development houses the Child Care and Development Fund (CCDF) program as well as staff that regulate certain categories of child care providers. The program promotes quality child care to Indiana families.

Summary Analysis

Michelle Thomas is the Quality Assurance Manager for the Child Care Section. Her responsibilities include developing and implementing a comprehensive program monitoring plan. The key business objective is to promote and provide quality child care to Indiana families through an effective and efficient service delivery system. The success metrics for this are defined and grouped as follows:

- Statewide error rate found in monitoring CCDF family eligibility
- Weekly Data Quality Assurance reports (AIS system)
- Trends in statewide regulated provider capacity
- CCDF federal reporting requirements
- CCDF budget vs. obligations, CCDF obligations vs. actual expenditures.

BCD collects data from their primary support systems, AIS and EPPIC, which has claims payment data. They have access to all of the data they need to manage the program.

BCD has a reporting system which handles most of their requests. They use the TANF Data Warehouse for some outside data needs. TANF, Audit Services are examples. They provide monthly access to their system to the data warehouse for federal reporting of child care data.

They have tools to use their own data but are very interested in using tablet PCs in the field and are heading toward GIS use, with which they welcome any assistance from DTS.

Division of Disability & Rehabilitative Services (DDRS)

Program Description

The Division of Disability & Rehabilitative Services (DDARS) exists to inform, protect, and serve individuals with disabilities and their families in need of human services, resources, or support to attain employment and self-sufficiency or to maintain independence. The Bureau of Developmental Disabilities (BDDS) plans, develops and administers a variety of services for people who have developmental disabilities. The Disability Determination Bureau provides eligible Hoosiers with Social Security and Supplemental Security Income Disability benefits.

Summary Analysis

DDRS has a project underway to merge the functionality of two systems into a single system for improved communication and efficiency of operations. Project management at DDRS understands that the TANF DWH can supply enterprise client identifiers (EDIs) to aid in bringing these systems' data together. DDRS is also looking at creating a data warehouse for integrated reporting.

Current systems are adequate for supporting current business objectives; however, additional reporting areas have been identified. For example, they would like to receive death data and service facility certification from the State Department of Health. They are concerned about conflicts of interests, such as a case manager owning a company that would sell goods to clients, but don't know if such a system exists.

Bureau of Aging & In-Home Services (BAIHS)

Program Description

The Bureau of Aging & In-Home Services (BAIHS) provides a broad range of in-home and community based services to older adults and persons of all ages with disabilities. Services focus on prevention, early intervention, protection and advocacy. The Bureau collaborates with communities, local organizations, and other units of government to provide services to individuals and their families.

Summary Analysis

The Bureau's data collection efforts focus on tracking clients served, costs, providers and funding sources. The user reported satisfaction with current data and tools; however, few metrics are defined and tracked. Interfaces exist that allow exchanges between related systems within the same division, and this program supplies a data feed to the TANF DWH for federal reporting.

Assessment of Technology Infrastructure

Existing Data Repositories

Currently there are six known data repositories in FSSA. The TANF Data Warehouse, First Steps Data Mart, CHIP/Hoosier Healthwise Data Mart, DMHA Data Mart, OMPP MedInsight Data Mart/Warehouse, and the OMPP AIM Operational Data Mart/Warehouse. The following table lists the technology and reporting structures that supports the program areas included in the survey.

Category	Technology	Projects Using
Business Intelligence	Cognos	TANF, First Steps, DMHA, CHIP/HH, ICES/EBT Operational Reporting
	Crystal Reports, Diver	OMPP MedInsight
	Business Objects	AIM Operational Reporting
Databases	Microsoft SQL Server	TANF, First Steps, DMHA, OMPP MedInsight
	OS390/DB2	TANF, CHIP/HH, ICES/EBT
	Oracle	AIM Operational reporting
Data Management	Ascential, QualityStage, DataStage	TANF
	Microsoft Utilities	TANF, DMHA, First Steps, MedInsight
	Oracle Software	AIM Operational Reporting
Operating Systems	COBOL	CHIP/HH, ICES/EBT Operational Reporting
	Windows	TANF, DMHA, First Steps, MedInsight
	Unix	AIM Operational Reporting
	OS/390	CHIP/HH, ICES/EBT Operational Reporting

Hardware/Software

Currently, some hardware and software is shared, although most of the software and hardware currently in use in FSSA varies by project. Different types of servers and operating systems are in use, including the state mainframe, UNIX, and Windows servers. Some servers are outside the state network, although most are inside. Several Data Base Management Systems (DBMS's) are in use, including OS390/DB2, SQL Server, and Oracle.

Several Business Intelligence Reporting Tools are used, including Cognos, Crystal Reports, and Business Objects. The Cognos Business Intelligence (BI) reporting and analytical software is supported by the FSSA Division of Technology Services (DTS) and is shared by the TANF Warehouse, First Steps mart, ICES/EBT operational systems, DMHA mart and the OMPP CHIP/Hoosier Healthwise mart. Crystal Reports, Business Objects, and Diver are used for OMPP reporting and analysis and are maintained by the vendors contracted for the work.

All data marts and warehouses maintain separate Data Base Management Systems (DBMS's) and servers. The DBMS's are maintained by each project's contractors. Servers inside the state network are maintained by DTS or the Office of Technology (IOT). Servers outside the state network are maintained by the vendors. Several methods of loading databases are used including, COBOL, DataStage, Microsoft utilities, DB2 utilities, and Oracle load utilities.

Interfaces

There is currently data that is shared between some programs areas and the need for additional interfaces were indicated for employment verification and birth and death data. Some areas have more specific needs within their Division, such as the sharing of data between Hospital and Community. There needs to be a general understanding of the process to attain the data needed from another area so that data can be shared and the appropriate security can remain in tact.

Integration

Because of the TANF matching program other programs are able to leverage the unique client identifier to match their data, such as ICWIS and HFI or DMHA to OMPP. Other matching methods include matching to SSN or RIDs.

Reporting

All of the areas surveyed have a combination of standard, ad-hoc and federal reporting. All had 20 or more reports and/or data structures to support the business. Most of the areas are using COGNOS or Business Objects for their multi-dimensional analysis however; no one seems to be using high level management reporting such as dashboards. Tying business objectives to the reporting will drive the need for the types and quantity of reports that are produced.

Limitations of the Report

All analysis was based on data that was gathered through interviews, direct questioning, and observation. Conclusions, opportunities, and recommendations found here are based on information that was made available or pursued by the analyst. It is probable that some recommended actions, processes or policies may, in fact, already be in place.

Opportunities for Improvement

This section identifies opportunities for improvement and documents them for later consideration. A more detailed analysis should be conducted to identify those opportunities with the highest payback and recommendations made for implementation. These suggested improvements may not apply to all the areas interviewed, but could be viewed as the foundation for continuous improvement throughout FSSA. Addressing these improvements offers a series of important benefits, including:

- Decrease costs by leveraging hardware and software assets across FSSA
- Increase productivity by improving data at the source, reducing the correction re-work cycle
- Reduce the amount of time required to get data to the end user
- Decreases the level of effort needed to manage the physical assets

The following areas are included in this analysis.

Data Sharing – It is apparent that to do business within FSSA, data sharing is needed between areas. The creation of a standard file from each area that addresses other program areas' needs will reduce the amount and creation of files produced.

Data Validation – Develop processes at the source system level to cleanse data to reduce the amount of data errors uncovered downstream.

Reporting – Each of the program areas interviewed produced 20 or more reports. An analysis needs to take place to ensure that all the reports are still needed or to determine if several reports could be combined to satisfy several user needs.

Reporting Tools – There is not a large variety of business intelligence tools used for reporting. FSSA may consider leveraging one or two tools to reduce overall costs.

Hardware – The hardware and DBMS's in place supports the needs of the program areas. However, most of the programs areas are not operating at capacity. Therefore, a better way can be investigated to leverage the Hardware and Software assets of FSSA.

Data Archival and Retrieval – Most of the systems studied do not appear to need more than 3 years of history to support the tactical and reporting needs of the business. A backup and archival plan could be implemented to ensure effective and efficient access to pertinent data.

Conclusions

FSSA has explored the need for an enterprise data warehouse many times and in many ways since 1995. Technology has advanced tremendously since 1995 and data warehousing is an established, highly desirable practice in industry and government. The longer FSSA waits to establish an enterprise data warehouse, the more expensive and difficult a solution becomes. The integrated reporting requirements of the programs are not going away and continue to grow every day with required rules and regulations that impact our program areas. As a result, the individual programs will continue to build their own solutions to their problems. That will lead to more repositories, data extracts, and duplicated software and hardware.

Appendix A: Data Mart/Warehouse Technical Architecture

The chart below displays the architectural characteristics of the existing data marts and data warehouses.

	Division of Family Resources		DMHA		Medicaid	
	TANF Data Warehouse	First Steps Data Mart	CHIP/HH Data Mart	DMHA Data Mart	AIM Data Mart	MedInsight Data Mart
Number of Users	100+	12	54	30 have access, 20 regular users	150	35
Number of Data Sources	20+	1	1	4	3	2
Number of Reports	50+	12	16	35	>100	40-50
Number of Cubes	15	2	8	1	several universes	12
Modeling Tool	ERWin	Vendor		ERWin	LBMS & ERWin	ERWin
Reporting Tool	Cognos	Cognos	Cognos	Cognos	Business Objects	Crystal
Analysis Tool	Cognos PowerPlay	Cognos PowerPlay	Cognos PowerPlay	Cognos PowerPlay, Access	Business Objects	Diver
Dashboard?	No	No	No	No	In development	Planned project
Servers dedicated to BI reporting?	4 (2 Test & 2 Production)	Shared w/TANF DWH	Shared w/ TANF DWH	Shared w/ TANF DWH	Yes	2
Is reporting Web-based?	Yes	Yes	Yes	Yes	Yes	Yes
Operating System for Reporting	Windows	Windows	Windows	Windows	Windows	Windows
DBMS	DB2 & SQL Server for data marts	SQL Server	DB2	SQL Server	Oracle	SQL Server
DBMS OS	Windows	Windows	OS/390	Windows	Unix	Windows

	Division of Family Resources		DMHA		Medicaid	
	TANF Data Warehouse	First Steps Data Mart	CHIP/HH Data Mart	DMHA Data Mart	AIM Data Mart	MedInsight Data Mart
Is database inside State Network?	Yes	Yes	Yes	Yes	No, it's on a trusted network	No
Is DBMS stored on dedicated server?	Yes	Yes	No (on shared mainframe)	Yes	Currently shared	Yes
Update frequency	Monthly	Monthly	Monthly	Weekly	Weekly	Monthly
How much history is available?	Back to 1994	6 Years	5 Years	SFY 2001-2005; plan to add 1998-2000	48 months	Back to 1994
How much history is required?	Back to 1994	2-3 Years		1-2 years	36 months	Varies
How large is the database?	800 GB data		5GB data	4-5 GB, 100K consumers, 4-5M services per year	1 Terabyte	1.3 Terabytes - load 3-5 GB per month
Structure of DB-Relational or Star?	Relational	Relational		Both; star for reporting	Star schema	Relational
Loading Process	Ascential DataStage	SQL Server DTS	COBOL Batch	SQL Server DTS	C programs with embedded SQL	Microsoft Data Transformation Services
Data Validation, Cleansing, Matching	5 major sources: Ascential QualityStage; others manual programs	Vendor performs first level; validation upon load to data mart	COBOL Batch for all	Queries results compared to source. ETL transforms to FSSA standards.	Validation during loads, error resolution, AIM edits, etc. No matching required.	Microsoft Transact SQL
Extracts provided to Other Entities?	Yes	Yes	No	Yes	Yes	Yes